CLAIMS

What is claimed is:

1. A method of treating primary cancer which comprises administering to a patient in need of such treatment a therapeutically effective amount of a topoisomerase inhibitor, or a pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof, and a therapeutically effective amount of thalidomide, or a pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof.

2. A method of treating metastatic cancer which comprises administering to a patient in need of such treatment a therapeutically effective amount of a topoisomerase inhibitor, or a pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof, and a therapeutically effective amount of thalidomide, or a pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof.

3. The method of claim 1 or 2 wherein the cancer is cancer of the head, neck, eye, mouth, throat, esophagus, chest, bone, lung, colon, rectum, stomach, prostate, breast, ovaries, kidney, liver, pancreas, and brain.

4. The method of claim 3 wherein the cancer is colon or rectal cancer.

5. The method of claim 1 or 2 wherein the topoisomerase inhibitor is selected from the group consisting of camptothecin, iriniotecan, SN-38, topotecan, 9-aminocamptothecin, GG-211, DX-8951f, saintopin, UCE6, UCE1022, TAN-1518A, TAN-1518B, KT6006, KT6528, ED-110, NB-506, ED-110, NB-506, rebeccamycin, bulgarein, Hoescht dye 33342, Hoechst dye 33258, nitidine, fagaronine, epiberberine, coralyne, beta-lapachone, BC-4-1, IST-622, rubitecan, pyrazoloacridine, XR-5000, and pharmaceutically acceptable prodrugs, salts, solvates, clathrates, hydrates, and metabolites thereof.

6. The method of claim 1 wherein the topoisomerase inhibitor is not irinotecan.

7. The method of claim 5 wherein the topoisomerase inhibitor is irinotecan or SN-38.

8. The method of claim 7 wherein the irinotecan or SN-38, or pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof, is administered in an amount of from about 1 to about 1000 mg/m^2, and the thalidomide, or pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof, is administered in an amount of from about 1 to about 2000 mg.

9. The method of claim 8 wherein the irinotecan or SN-38, or pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof, is administered in an amount of from about 25 to about 750 mg/m^2, and the thalidomide, or pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof, is administered in an amount of from about 50 to about 1000 mg.

10. The method of claim 9 wherein the irinotecan or SN-38, or pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof, is administered in an amount of from about 50 to about 500 mg/m^2, and the thalidomide, or pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof, is administered in an amount of from about 100 to about 750 mg.

11. The method of claim 10 wherein the irinotecan or SN-38, or pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof, is administered in an amount of from about 100 to about 350 mg/m^2, and the thalidomide, or pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof, is administered in an amount of from about 200 to about 500 mg.

12. A method of increasing the dosage of a topoisomerase inhibitor that can be safely and effectively administered to a patient, which comprises administering to a patient in need of such an increased dosage an amount of thalidomide, or a pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof, that is sufficient to reduce a dose-limiting adverse effect associated with the topoisomerase inhibitor.

13. The method of claim 12 wherein the thalidomide, or a pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof, is administered prior to the administration of the topoisomerase inhibitor.

14. The method of claim 12 wherein the thalidomide, or a pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof, is administered simultaneously with the administration of the topoisomerase inhibitor.

15. The method of claim 12 wherein the thalidomide, or a pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof, is administered after the administration of the topoisomerase inhibitor.

16. The method of claim 12 wherein the dose-limiting adverse effect is selected from the group consisting of gastrointestinal toxicity; nausea; vomiting; anorexia; leukopenia; anemia; neutropenia; asthenia; abdominal cramping; fever; pain; loss of body weight; dehydration; alopecia; dyspnea; insomnia; dizziness, mucositis, xerostomia, and kidney failure.

17. The method of claim 16 wherein the gastrointestinal toxicity is early-forming diarrhea or late-forming diarrhea.

18. The method of claim 12 wherein the topoisomerase inhibitor is selected from the group consisting of camptothecin, irinotecan, SN-38, topotecan, 9-aminocamptothecin, GG-211, DX-8951f, saintopin, UCE6, UCE1022, TAN-1518A, TAN-1518B, KT6006, KT6528, ED-110, NB-506, ED-110, NB-506, rebeccamycin, bulgarein, Hoescht dye 33342, Hoechst dye 33258, nitidine, fagaronine, epiberberine, coralyne, beta-lapachone, BC-4-1, and pharmaceutically acceptable prodrugs, salts, solvates, clathrates, hydrates, and metabolites thereof.

19. The method of claim 12 wherein the topoisomerase inhibitor is not irinotecan.

20. The method of claim 18 wherein the topoisomerase inhibitor is irinotecan or SN-38.

21. The method of claim 20 wherein the thalidomide, or pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof, is administered in an amount of from about 1 to about 2000 mg.

22. The method of claim 21 wherein the thalidomide, or pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof, is administered in an amount of from about 50 to about 1000 mg.

23. The method of claim 22 wherein the thalidomide, or pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof, is administered in an amount of from about 100 to about 750 mg.

24. The method of claim 23 wherein the thalidomide, or pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof, is administered in an amount of from about 200 to about 500 mg.

25. A method of reducing or preventing an adverse effect associated with chemotherapy, which comprises administering to a patient in need of such treatment or prevention an amount of thalidomide, or a pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof, that is sufficient to reduce an adverse effect associated with the chemotherapy.

26. A method of reducing or preventing an adverse effect associated with radiation therapy, which comprises administering to a patient in need of such treatment or prevention an amount of thalidomide, or a pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof, that is sufficient to reduce an adverse effect associated with the radiation therapy.

27. The method of claim 25 or 26 wherein the thalidomide, or a pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof, is administered prior to the administration of the topoisomerase inhibitor.

28. The method of claim 25 or 26 wherein the thalidomide, or a pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof, is administered simultaneously with the administration of the topoisomerase inhibitor.

29. The method of claim 25 or 26 wherein the thalidomide, or a pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof, is administered after the administration of the topoisomerase inhibitor.

30. The method of claim 25 or 26 wherein the adverse effect is selected from the group consisting of gastrointestinal toxicity; nausea; vomiting; anorexia; leukopenia; anemia; neutropenia; asthenia; abdominal cramping; fever; pain; loss of body weight; dehydration; alopecia; dyspnea; insomnia; dizziness, mucositis, xerostomia, and kidney failure.

31. The method of claim 30 wherein the gastrointestinal toxicity is early-forming diarrhea or late-forming diarrhea.

32. The method of claim 30 wherein the thalidomide, or pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof, is administered in an amount of from about 1 to about 2000 mg.

33. The method of claim 32 wherein the thalidomide, or pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof, is administered in an amount of from about 50 to about 1000 mg.

34. The method of claim 33 wherein the thalidomide, or pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof, is administered in an amount of from about 100 to about 750 mg.

35. The method of claim 34 wherein the thalidomide, or pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof, is administered in an amount of from about 200 to about 500 mg.

36. A method of increasing the therapeutic efficacy of a topoisomerase inhibitor which comprises administering to a patient in need of such increased therapeutic efficacy an amount of thalidomide, or a pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof, that is sufficient to increase the therapeutic efficacy of the topoisomerase inhibitor.

37. The method of claim 36 wherein the thalidomide, or a pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof, is administered prior to administration of the topoisomerase inhibitor to the patient.

38. The method of claim 36 wherein the thalidomide, or a pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof, is administered during administration of the topoisomerase inhibitor to the patient.

39. The method of claim 36 wherein the thalidomide, or a pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof, is administered after administration of the topoisomerase inhibitor to the patient.

40. A method of protecting a cancer patient from adverse effects associated with the administration of an anti-cancer drug which comprises administering an effective amount of thalidomide, or a pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof, to a patient undergoing chemotherapy.

41. The method of claim 40 wherein the protection is of the gastrointestinal tract.

42. The method of claim 41 wherein the thalidomide, or a pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof is administered orally once daily at night.

43. The method of claim 41 wherein the thalidomide, or a pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof is administered prior to or during chemotherapy.

44. The method of claim 41 wherein the thalidomide, or a pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof is administered following chemotherapy.

45. A pharmaceutical composition comprising a topoisomerase inhibitor, or a pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof, and thalidomide, or a pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof.

46. The pharmaceutical composition of claim 45 wherein the topoisomerase inhibitor is selected from the group consisting of camptothecin, irinotecan, SN-38, topotecan, 9-aminocamptothecin, GG-211, DX-8951f, saintopin, UCE6, UCE1022, TAN-1518A, TAN-1518B, KT6006, KT6528, ED-110, NB-506, ED-110, NB-506, rebeccamycin, bulgarein, Hoescht dye 33342, Hoechst dye 33258, nitidine, fagaronine, epiberberine, coralyne, beta-lapachone, BC-4-1, and pharmaceutically acceptable prodrugs, salts, solvates, clathrates, hydrates, and metabolites thereof.

47. The pharmaceutical composition of claim 45 wherein the topoisomerase inhibitor is not irinotecan.

48. The pharmaceutical composition of claim 46 wherein the topoisomerase inhibitor is irinotecan or SN-38.

49. A dosage form comprising a topoisomerase inhibitor, or a pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof, and thalidomide, or a pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof.

50. The dosage form of claim 49 wherein the topoisomerase inhibitor is selected from the group consisting of camptothecin, irinotecan, SN-38, topotecan, 9-aminocamptothecin, GG-211, DX-8951f, saintopin, UCE6, UCE1022, TAN-1518A, TAN-1518B, KT6006, KT6528, ED-110, NB-506, ED-110, NB-506, rebeccamycin, bulgarein, Hoescht dye 33342, Hoechst dye 33258, nitidine, fagaronine, epiberberine, coralyne, beta-lapachone, BC-4-1, and pharmaceutically acceptable prodrugs, salts, solvates, clathrates, hydrates, and metabolites thereof.

51. The dosage form of claim 49 wherein the topoisomerase inhibitor is not irinotecan.

52. The dosage form of claim 50 wherein the topoisomerase inhibitor is irinotecan or SN-38.

53. The dosage form of claim 49, wherein said dosage form is suitable for oral administration to a patient.

54. The dosage form of claim 49, wherein said dosage form is suitable for parenteral administration to a patient.

55. The dosage form of claim 49, wherein said dosage form is suitable for transdermal, topical, or mucosal administration to a patient.

56. A dosage form comprising an amount of a topoisomerase inhibitor, or a pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof, and an amount of thalidomide, or a pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof, wherein the amount of topoisomerase inhibitor is less than that which would be therapeutically effective in the treatment of cancer if administered in combination with no other drugs to a patient suffering from cancer.

57. A kit for use in the treatment of cancer, which comprises a dosage form of a topoisomerase inhibitor or a pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof, and a dosage form of thalidomide, or a pharmaceutically acceptable prodrug, salt, solvate, hydrate, or clathrate thereof.

58. The kit of claim 57 wherein the topoisomerase inhibitor is selected from the group consisting of camptothecin, irinotecan, SN-38, topotecan, 9-aminocamptothecin, GG-211, DX-8951f, saintopin, UCE6, UCE1022, TAN-1518A, TAN-1518B, KT6006, KT6528, ED-110, NB-506, ED-110, NB-506, rebeccamycin, bulgarein, Hoescht dye 33342, Hoechst dye 33258, nitidine, fagaronine, epiberberine, coralyne, beta-lapachone, BC-4-1, and pharmaceutically acceptable prodrugs, salts, solvates, clathrates, hydrates, and metabolites thereof.

59. The kit of claim 57 wherein the topoisomerase inhibitor is not irinotecan.

60. The kit of claim 58 wherein the topoisomerase inhibitor is irinotecan or SN-38.